

MILITARY SPECIFICATION
SEMICONDUCTOR DEVICE, DIODE, SILICON
TYPE 1N1742A

1. SCOPE

1.1 Description. This specification covers the detail requirements for a 49.6 volt $\pm 5\%$, silicon, voltage-reference diode, and is in accordance with MIL-S-19500 and as specified herein. This device shall not be used for new design.

1.2 Maximum ratings.

P_T	Temperature range	I_{ZM}	Power derating above 25°C
(mW)	(°C)	(mA _{dc})	(mW/°C)
1600	-55 to +150	30	12.8

1.3 Characteristics.

	BV ($I_Z = 7.5 \pm 0.1$ mA _{dc})	Z ($I_Z = 7.5 \pm 0.1$ mA _{dc})	Δ BV voltage Temperature stability ($I_Z = 7.5 \pm 0.1$ mA _{dc})	T _{op}	T _{stg}
	(volts)	(ohms)	(volts)	(°C)	(°C)
Min.	47.2	---	---	-55	-55
Max.	52.0	160	0.200	100	150

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein:

SPECIFICATION

Military

MIL-S-19500 - Semiconductor Devices, General Specification for.

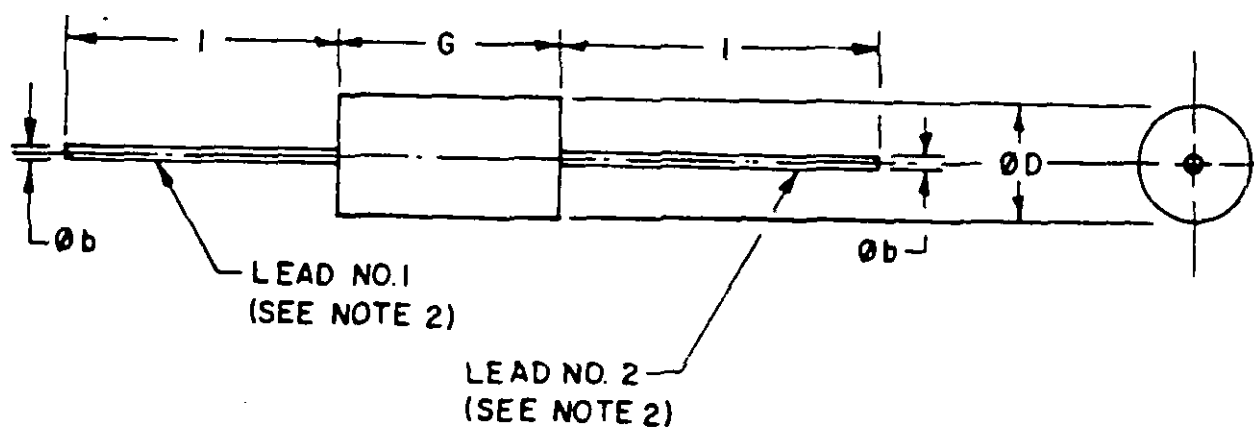
STANDARD

Military

MIL-STD-750 - Test Methods for Semiconductor Devices.

(Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

FSC 5960



DIMENSIONS				
LTR	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
Øb	.030	.034	.77	.86
ØD		.641		16.28
G	1.220		30.99	
L	1.750		44.45	

NOTES:

1. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.
2. Leads shall be electrically insulated from the case.

Figure 1. Semiconductor device, diode, type 1N1742A.

3. REQUIREMENTS

3.1 General. Requirements for the semiconductor diodes shall be in accordance with MIL-S-19500, and as specified herein.

3.2 Abbreviations and symbols. The abbreviations and symbols used herein are defined in MIL-S-19500 and as follows:

I_{sig} ----- Generator signal current

3.3 Design and construction. The semiconductor diode covered herein shall be of the design, construction, and physical dimensions specified in figure 1.

3.4 Performance characteristics. Performance characteristics shall be as specified in tables I and II.

3.5 Marking. The marking shall be placed on each device in accordance with MIL-S-19500 except the polarity shall be indicated with a contrasting color band on the diode body to denote the positive terminal.

3.5.1 The manufacturer at his option may omit the following markings:

- (a) Manufacturer's identification.
- (b) Country of origin.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.2 Qualification inspection. Qualification inspection shall consist of the examinations and tests specified in tables I and II.

4.3 Quality conformance inspection. Quality conformance inspection shall consist of groups A and B inspections.

4.4 Group A inspection. Group A inspection shall consist of the examinations and tests specified in table I.

4.5 Group B inspection. Group B inspection shall consist of the examinations and tests specified in table II. These tests shall be performed for qualification and every six months thereafter.

Table I. Group A inspection.

Examination or test	MIL-STD-750		L T P D	Symbol	Limits		
	Method	Details			Min	Max	Unit
<u>Subgroup 1</u>			5				
Visual and mechanical examination	2071			---	---	---	---
<u>Subgroup 2</u>			5				
Breakdown voltage	---	$I_Z = 7.5 \pm 0.1 \text{ mAdc}$		BV	47.2	52.0	Vdc
Small-signal breakdown impedance	4051	$I_Z = 7.5 \pm 0.1 \text{ mAdc}$ $I_{sig} = 1 \text{ mAac}$		Z	---	160	Ohms
Voltage temperature stability	---	$I_Z = 7.5 \pm 0.1 \text{ mAdc}$ Reference = 25°C $T_1 = -55^\circ \pm 2^\circ \text{C}$ $T_2 = 100^\circ \pm 2^\circ \text{C}$		ΔBV_1 ΔBV_2	---	0.200 0.200	Vdc Vdc

Table II. Group B inspection.

Examination or test	MIL-STD-750		L T P D	Symbol	Limits		
	Method	Details			Min	Max	Unit
<u>Subgroup 1</u>			10				
Physical dimensions	2066			---	---	---	---
<u>Subgroup 2</u>			10				
Moisture resistance	1021	Omit initial conditioning		---	---	---	---
Shock	2016	1500 G; $t = 0.5$ msec; 5 blows each in orientation: X_1 , Y_1 , and Y_2		---	---	---	---
Constant acceleration	2006	5,000 G; orientations X_1 , Y_1 , and Y_2		---	---	---	---
End points:							
Breakdown voltage	---	$I_Z = 7.5 \pm 0.1$ mAdc		BV	47.2	52.0	Vdc
Small-signal breakdown impedance	4051	$I_Z = 7.5 \pm 0.1$ mAdc $I_{sig} = 1$ mAac		Z	---	160	ohms
Voltage temperature stability	---	$I_Z = 7.5 \pm 0.1$ mAdc; Reference = 25° C $T_1 = -55^\circ \pm 2^\circ$ C $T_2 = 100^\circ \pm 2^\circ$ C		ΔBV_1 ΔBV_2	---	0.200 0.200	Vdc Vdc
<u>Subgroup 3</u>			$\lambda = 10$				
Steady state operation life	1026	$I_Z = 7.5 \pm 0.1$ mAdc; $T_A = 100^\circ$ C		BV	47.2	52.0	Vdc
End points:							
(Same as subgroup 2)							

5. PREPARATION FOR DELIVERY

5.1 Preparation for delivery shall be in accordance with MIL-S-19500.

6. NOTES

6.1 Notes. The notes specified in MIL-S-19500 are applicable to this specification.Preparing activity:
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